UNIVERSITÄT BERN

EMPLOYMENT SITUATION AT AGE THIRTY

RESULTS UPDATE OF THE SWISS PANEL SURVEY TREE

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Transitionen von der **E**rstausbildung ins **E**rwerbsleben
Transitions de l'**E**cole à l'**E**mploi
Transitions from **E**ducation to **E**mployment

TREE, Bern 2017
www.tree.unibe.ch

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1 INTRODUCTION

The present report addresses employment pathways from the end of compulsory education to young adulthood. The empirical database is the TREE panel survey (Transitions from Education to Employment). The analyses draw on the first nine panel waves from 2001 to 2014.

This report is organised as follows: Section 2 gives a brief overview of the goals, design and methodology of the TREE study and describes the administration of the survey. Section 3 provides a synopsis of the education and employment pathways across the entire period of observation from 2000 to 2014. Sections 4 to 7 analyse the TREE cohort's general employment situation, its rate of employment, income and precarious employment at the time of the last survey in 2014.

The results are intended for both scholars and an interested non-expert audience. They are mostly of a descriptive kind but have been validated by multivariate analyses and compared with other data sources where available. We hope to provide a stimulating, informative and instructive reading experience.

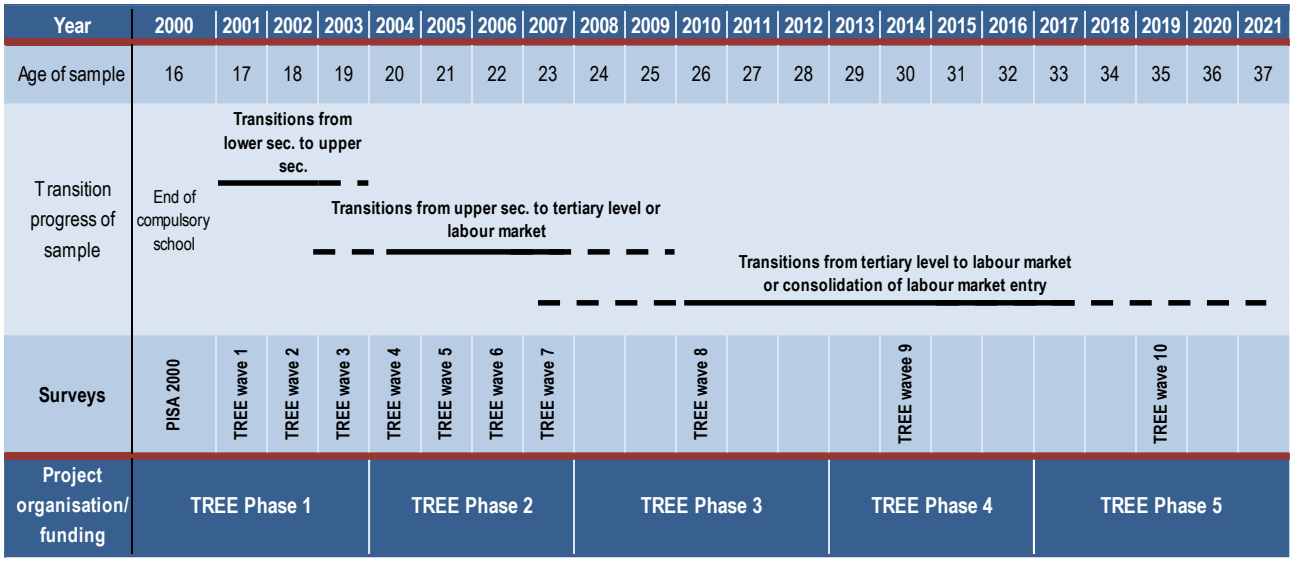
For more detailed findings, interested readers may consult the numerous analyses of TREE data published in recent years (see references, p. 33). Many of these publications are available for download on the project website (www.tree.unibe.ch). This report continues where the earlier synopses, based on previous TREE panel data, by Meyer (2005), Bertschy, Böni and Meyer (2007) Keller, Hupka-Brunner and Meyer (2010) and Scharenberg et al. (2014) left off.

2 TREE PROJECT PROFILE AND METHODOLOGICAL DESIGN

TREE is the first longitudinal study at the national level in Switzerland to address the transition of young people from school to work and young adulthood. The survey focuses on post-compulsory education and employment pathways. The TREE sample consists of approximately 6,000 young people who participated in the PISA survey (Programme for International Student Assessment; BFS & EDK, 2002) in 2000 and left compulsory schooling in the same year. It is a representative sample of Switzerland as a whole, the Swiss language regions and selected cantons (Bern, Geneva, Ticino, St Gallen).

The first phase of the project (involving the three follow-up surveys between 2001 and 2003) tracked the respondents' education and employment pathways at the interface of compulsory school and upper-secondary general or vocational education (the so-called *first threshold*). During this first phase, the main focus was on reasons for and typical trajectories and consequences of irregular or critical educational careers, with particular attention paid to early dropout (young people who fail to graduate from a post-compulsory education or training programme).

FIGURE 1 *TREE SURVEY DESIGN*



In TREE's second phase (involving four more annual follow-up surveys between 2004 and 2007), the survey centred on what we refer to as the second threshold, that is, the transition from upper-secondary education to working life or tertiary education. The third phase (2008 to current) involved additional surveys in 2010 and 2014, thus ten and 14 years after completion of compulsory schooling, respectively. This phase focused on the transition to employment by respondents who completed tertiary education (e.g., at a university) and on the early stages of career consolidation in those cases in which the transition to the labour market occurred after upper secondary education.

TREE is located at the University of Basel; the Swiss National Science Foundation (SNSF) has been its major source of funding.

The PISA 2000/TREE sample is representative of the approximately 80,000 youths in Switzerland who finished the nine years of compulsory education in 2000 and left compulsory school the same year.

The data have been weighted to compensate for biases due to sample attrition, a common issue in any longitudinal research. Hence, the TREE results are not exact values but statistically inferred estimates for the described sample. Within certain margins of error, these estimates can be assumed to be representative of the population under study, that is, the school leavers of the year 2000. These estimates thus involve some degree of uncertainty so that, for instance, the 'actual' proportion of individuals with a certain level of education lies within a confidence interval around the respective value indicated. To facilitate legibility, we have omitted information on

confidence intervals in the running text. This information is provided in tables in the appendix. The following text nevertheless takes estimation accuracy into account in that it generally only reports statistically significant differences between groups.

All calculations were performed on appropriately weighted samples (Sacchi, 2011). Parameter estimates and confidence interval calculations were all performed using suitable methods to properly model the complex structure of the PISA 2000/TREE sample. As a rule, the estimates in this publication are expressed in integer percentages or are rounded to thousands in the case of absolute population estimates. Results based on unweighted subsamples of less than 30 persons are typically not reported. Upon request, the authors will gladly provide more detailed information on weighting and parameter estimation methodology.

3 EDUCATION AND EMPLOYMENT PATHWAYS OF THE PISA 2000/TREE COHORT: SYNOPSIS 2000–2014

In 2014, 14 years after leaving compulsory education and at an average age of 30, the majority of the cohort under study has made the transition from education to employment. Approximately one-sixth are still in education, mostly at the tertiary level. Nearly 90 per cent of the cohort are in employment; more than three-quarters is pursuing gainful employment only, that is, without attending any education or training programme at the same time. Roughly seven per cent of the cohort are neither in employment nor in education or training (NEET[1]).

Fourteen years after the end of compulsory schooling, about half of the TREE respondents have successfully completed upper secondary and 40 per cent tertiary education (23% tertiary A, 17% tertiary B).[2] One in ten has not acquired a post-compulsory certificate of any kind. The graduation rate at the tertiary level can be expected to increase by a few percentage points in the years to come. There are two reasons for this: First, in 2014, about seven per cent of the cohort that had not (yet) completed some form of tertiary education was in tertiary education. Second, a (small) proportion of those who had completed upper secondary education by 2014 are still likely to begin (and complete) tertiary education.

The majority of the TREE cohort had thus made the transition from education to employment by 2014, at the average age of 30 years. What the development across the last three observation periods (2007–2014) demonstrates, however, is the extent to which the transitions from education to employment extend well into the third decade of life (and even beyond) – and this can go in both directions: from education to employment and vice versa.

Let us begin by taking a look at the transitions between 2007 and 2010, thus the age span from 23 to 26. A cumulated sixth of the cohort made the transition from education to employment during this time. Conversely, some five per cent of those who had been (exclusively) in employment in 2007 were found to be in tertiary B education and training programmes in 2010.

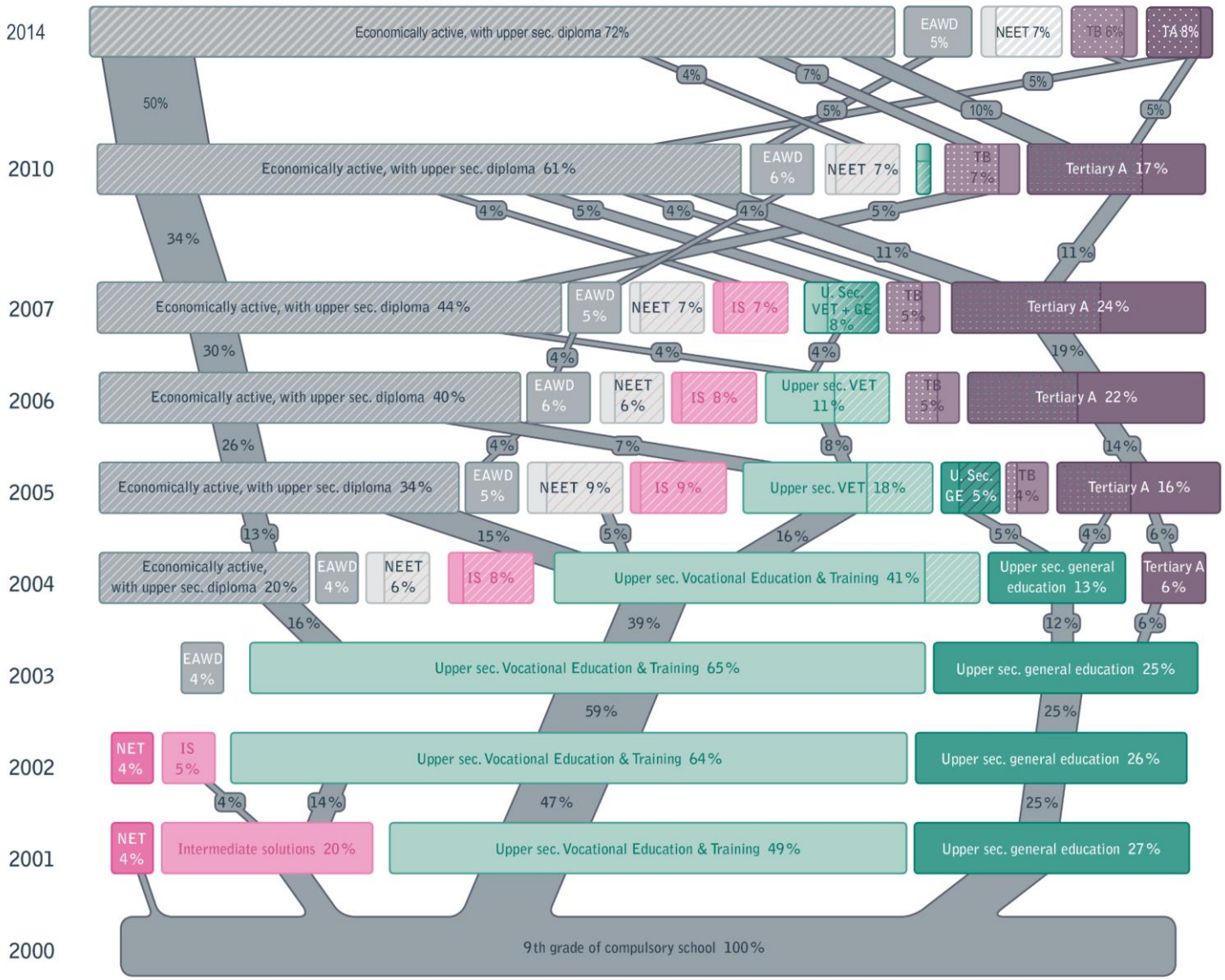
Between 2010 to 2014, more than 20 per cent of the cohort entered the labour market upon successfully completing (mostly tertiary) education. Yet there were still transitions in the other direction as well: some five per cent of the cohort fell into the category of (exclusively) in employment in 2010, whereas the same percentage was in tertiary education in 2014 (half of them in tertiary A and B programmes, respectively; these 'branches' are therefore not visible in the tree diagram).

The (small) group of those who were gainfully employed without having completed post-compulsory education of any kind is markedly stable (5–6% of the cohort). From 2005 on, we observe no change in the status of most in this group. This implies, first, that they did not acquire a post-compulsory certificate at a later point in time, and, second, that they still seem to have consistently been able to hold their ground in the labour market.

1 NEET = **N**ot in **e**ducation, **e**mployment or **t**raining.

2 Tertiary A essentially comprises the 'Bologna-style' programmes (Bachelor or Master level) offered at universities, schools of education and universities of applied sciences. Tertiary B refers to higher vocational training, including technical colleges. The distinction follows the old 1997 ISCED classification, which is still widely used
(ISCED: International Standard Classification of Education; see http://www.unesco.org/education/information/nfsunesco/doc/isced_1997.htm).
For the new ISCED classification of 2011, see http://uis.unesco.org/en/topic/international-standard-classification-education-isced.

FIGURE 2 *POST-COMPULSORY EDUCATION AND EMPLOYMENT PATHWAYS, 2000–2014*



NET = Not in education or training
IS = Intermediate solutions
EAWD = Economically active without upper sec. diploma
NEET = Neither economically active nor in education or training
VET = Vocational education and training
GE = General education
Tertiary A = Universities and Universities of Applied Sciences
TB = Tertiary B = other postsecondary education and training

upper sec. certificate obtained

Both enrolled in education/training and gainfully employed

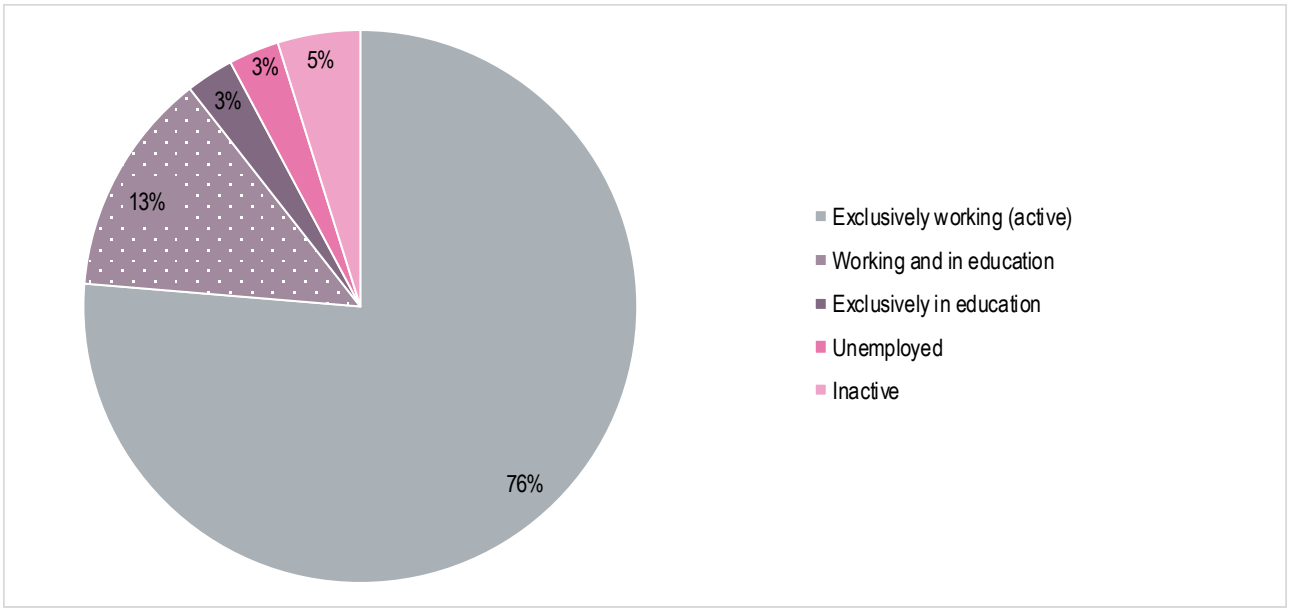
The sum of the horizontal bars can differ from 100% due to rounding errors and omission of groups smaller than 4 cohort percent.

The vertical bars, symbolising the tree's branches, represent the major pathways from one year of observation to the next. They are (also) proportional to the percentages of the cohort to be found on that pathway, i.e. the thicker the branch, the higher the part of the cohort concerned. Pathways representing groups of less than 4 cohort percent have not been visualised in order to keep the graph readable.

4 EMPLOYMENT SITUATION IN 2014

The following sections provide an overview of the employment situation among the TREE cohort under study. How many young adults in Switzerland were gainfully employed in 2014, 14 years after completing compulsory education, at an average age of 30 years? How high is their unemployment rate and what percentage is not economically active? Who works part-time, who full-time, who under precarious conditions, and how much do the young adults who make up the TREE cohort earn? In the following, we will first describe the employment situation for the entire TREE cohort. We will then present more detailed descriptive findings, distinguished by population attributes such as gender, migration background, language region and highest educational attainment. Subsequently, we will assess the extent to which these attributes predict the employment situation in 2014.[3]

FIGURE 3 EMPLOYMENT AND EDUCATION SITUATION IN 2014



As Figure 3 shows, the large majority of TREE respondents were successful in entering the labour market: About three-quarters (76%) were exclusively in employment in 2014 (i.e., without pursuing education or training in parallel). Another 13 per cent worked while in education or training. If we take the small group into consideration that was exclusively in education (3%; i.e., the group that did not work at the same time), one-sixth of TREE cohort was still at least partially in education at an average 30 years of age.

Three per cent of the TREE cohort were unemployed in 2014. About eight per cent of the TREE cohort fell into the category of "not economically active" (among them most of those exclusively in education). The employment rate among the PISA2000/TREE cohort was thus roughly 90 per cent in 2014. After considering estimation errors and differences in the definitions and populations upon which the calculation of rates is based, we can speak of

[3] The definition of gainful employment is based on International Labour Organization (ILO) standards, which also underlie the labour market statistics issued by the Swiss Federal Statistical Office (e.g., the Swiss Labour Market Survey; SAKE).
According to ILO standards, *employed / active* persons are all individuals of working age (15–75 years of age) who work in a job for at least one hour per week.
Persons are considered *unemployed* if they are not gainfully employed at the time of the survey, are looking for work and are available to work. This definition must not be confused with a definition of *unemployment* that includes only the unemployed that have registered with the regional job placement centres.
Persons classified as *not economically active / inactive* are those persons who are neither employed nor unemployed.
See http://www.ilo.org/global/statistics-and-databases/statistics-overview-and-topics/WCMS_470304/lang--en/index.htm; for Switzerland, see also BFS (2015): Arbeitsmarktindikatoren 2015. Neuchâtel: Bundesamt für Statistik.

a fairly good agreement between the TREE results and 'official' statistics (FSO, 2015). By international standards, Switzerland features a comparatively high level of labour market integration among young adults. In 2012, the average employment rate among thirty-year-olds in the 28 EU member states was about 75 per cent, the unemployment rate just under ten per cent and the economic inactivity rate[4] at around 13 per cent.[5] The relative risk of youth unemployment in Switzerland is slightly below the OECD and EU average (1.8% versus 2.1 and 2.2% respectively).[6]

The following analyses consider only those in employment who did not pursue education or training while working.

The first observation is that the employment situation differs considerably by gender and family situation. Whereas the employment status of Women without children barely differs from that of men, a pronounced gender gap begins to open up once there are children. The employment rate among Women with children drops below 80 per cent, and the share of those that exit the labour market at least temporarily increases to about 20 per cent. We observe the opposite development among men: men with children are much more frequently in employment than men without; their employment rate reaches nearly 100 per cent. The findings are similar if we look at the extent of employment (see the respective section on p. 15).

As for migration background, what is initially surprising is the exceptionally high employment rate among first-generation immigrants (95%), which is significantly higher than that among both the 'native' population and the "secondos" (second generation: 84%). Considering their higher educational attainment, one would rather expect the contrary. According to Scharenberg et al (2014:14), for instance, young first-generation immigrants much more frequently lack post-compulsory education than the secondos. Other studies show that second-generation immigrants do as well as or even better than the native population when it comes to acquiring a post-compulsory certificate and when statistically controlling for social background and other relevant attributes (Bolzman et al., 2003; Griga, 2014). Secondos nevertheless seems to have much greater difficulties in the labour market: their risk of unemployment is significantly higher (at 10%) than that of the native population and first-generation immigrants. In this context, we must not forget, however, that the secondos are an ethnically and economically extraordinarily heterogeneous group. A substantial proportion of them come from the successor countries of former Yugoslavia or from Turkey and demonstrably face discrimination and greater difficulties in integrating into the labour market (Fibbi et al., 2015; Fibbi, Lerch & Wanner, 2006, Guarin & Rousseaux, 2017).

With regard to the Swiss language regions, Figure 4 suggests that the labour market situation in Italian-speaking Switzerland is markedly more problematic than north of the Alps. The unemployment rate among the respondents at the time of the 2014 TREE survey was several times higher in Italian-speaking Switzerland than in the German- and French-speaking regions (2% and 5% respectively). Conversely, the employment rate was markedly lower (81% vs. 92% and 90% respectively).

4 EU statistics use the NEET category (not in education, employment or training), which deviates slightly from the definition of not economically active used here.

5 Source: http://ec.europa.eu/eurostat/statistics-explained/index.php/Youth_unemployment.

6 Youth unemployment rate divided by the rate of total unemployment.

FIGURE 4 *EMPLOYMENT SITUATION IN 2014 BY GENDER, PARENTHOOD, MIGRATION BACKGROUND, LANGUAGE REGION AND EDUCATIONAL ATTAINMENT*

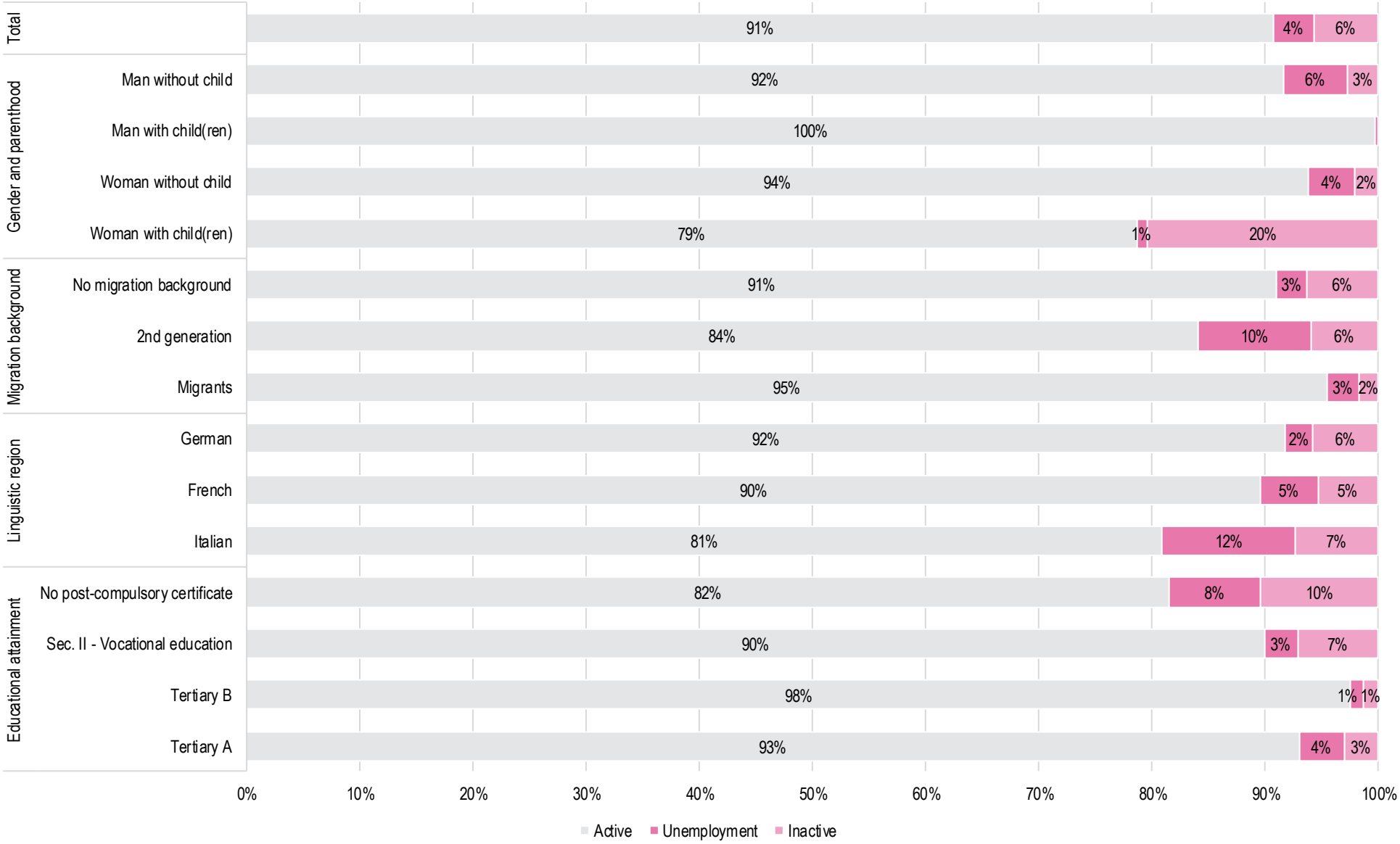


Figure 4 visualises the employment situation in 2014 among those who are not enrolled in education (anymore). If we look at the employment rate by educational attainment, we can see that it tends to be higher, the higher the level of educational attainment. Individuals with no post-compulsory certificate have an employment rate of 82 per cent. Graduates of upper secondary vocational education and training have an employment rate of just under 90 per cent and are thus in line with the overall average. The ones with the highest employment rate of well above 90 per cent are the holders of a tertiary degree, especially those with a tertiary B certificate (nearly 98%). In regard to unemployment and economic inactivity, what stands out is the high rates among those who lack a post-compulsory certificate (about 8% and 10% respectively).

When considering these findings, we need to bear in mind that they are the product of a cross-sectional perspective, a snapshot at an average age of 30 years. This says little about cumulative labour market opportunities and risks in a longitudinal perspective. The respective analyses of TREE data are in preparation and still awaiting publication. A look at the work of the Swiss Federal Statistical Office in the context of the "Longitudinal Analyses in the Education Sector" programme (*Längsschnittanalysen im Bildungsbereich*) provides clear evidence that cumulated long-term risks are considerably higher than the cross-sectional risks presented here. The FSO analyses based on statistical educational data from exhaustive surveys have investigated, among other things, the risk that upper secondary graduates are forced to register as unemployed once within 30 months upon completing their certificate. The respective rate is at least 14 per cent overall[7], with considerable variation depending on the level of educational attainment. In this context, we see that not only those without a post-compulsory certificated face a cumulated unemployment risk of over 20 per cent. The same is also true for the holders of a Swiss Federal VET Certificate (*Eidgenössisches Berufsattest*) or a Federal Certificate of Competence (*Fähigkeitszeugnis*) after three years of basic VET (Strubi et al., in preparation).

Multivariate Analysis

In this section, we examine the extent to which the cohort's labour market status in 2014 can be statistically predicted by a number of characteristics, which, in previous analyses, have proved to affect the employment situation (Bertschy et al., 2007; Keller et al., 2010; Scharenberg et al., 2014). To this end, we developed a multinomial logistic regression model with labour market status as the dependent variable. The three categories of the dependent variable are identical with those displayed in the bivariate statistics in the previous section: economically active, unemployed and inactive (for definitions see footnote 7, p.13). The model allows us to assess the impact of a given factor while statistically controlling for all other factors considered. We started by including the characteristics described in the model above: gender, migration background, family situation, educational attainment and language region. Beyond these characteristics, we checked for effects of further factors related to (academic) skills, educational pathways and social origin, that is, type of lower secondary school track attended, educational status in the first post-compulsory year, reading literacy skills (PISA) and parental socio-economic status. The latter two turned out to have no (direct) significant effect on labour market status and were excluded from the final model (for the full regression table, see Appendix 2, p. 24).[8] The full final model was run on the same subsample as all analyses in this chapter.[9] It yields a fair fit to the data (McFadden's $R^2 = 0.22$). All of the findings reported below are statistically significant at least at the .9 level. These are the main results:

1. In terms of a 'gendered' labour market situation, the multivariate model clearly confirms the findings of the descriptive results displayed on the previous pages: all else being equal, both the presence and the number of children significantly reduce the labour market participation of women, while the effect on men is inverse (see also the section Level of Employment, p.15; Levy & Widmer, 2013).

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7 The unemployment rate according to ILO standards, which also takes the unregistered unemployed into account, can be expected to be considerably higher.

8 This does not imply that skills and socio-economic origin do not have an impact on labour market status at all. It must rather be assumed that the effect is indirect, i.e., moderated by other characteristics such as educational attainment or educational pathway characteristics.

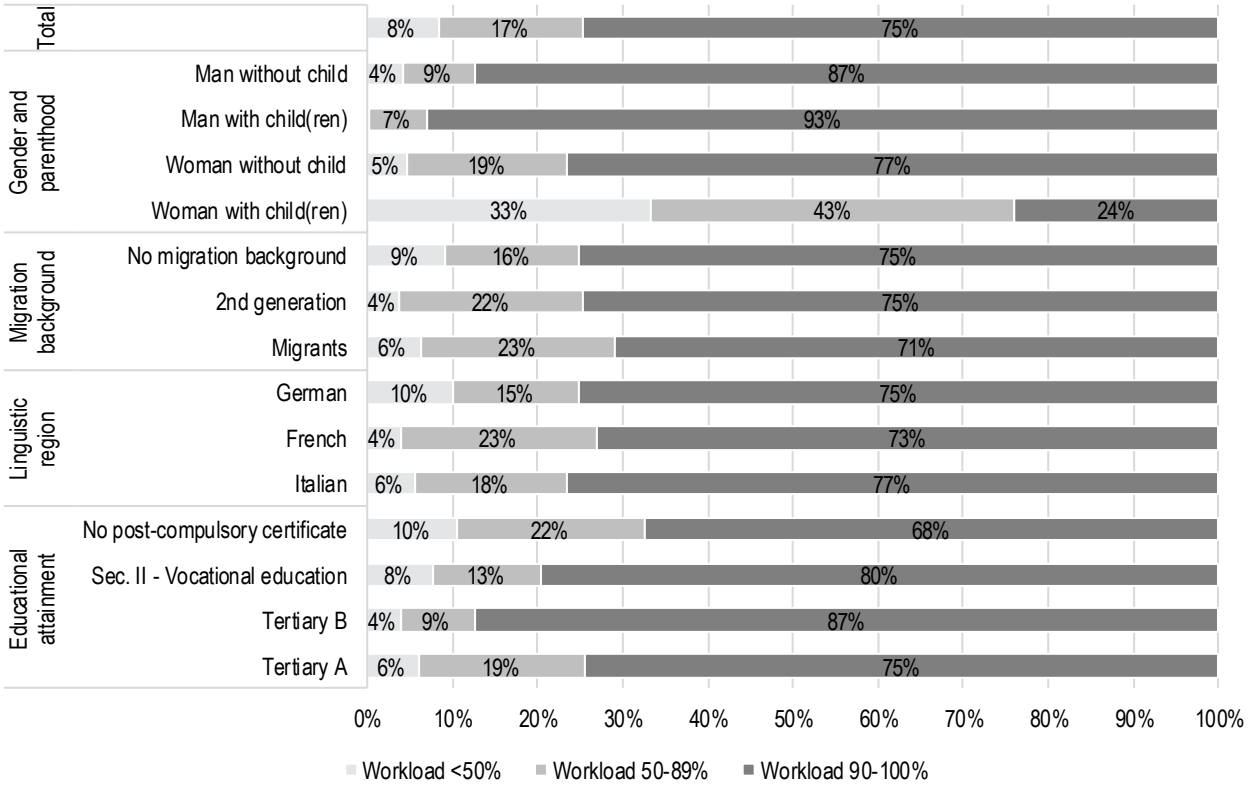
9 Namely, economically active, unemployed or inactive respondents who are not enrolled in a formal education programme at the same time.

2. With regard to migration background, the model also confirms the descriptive results reported in the first part of this section: while the labour market participation of first-generation immigrants (all else being equal) is significantly higher than that of the 'natives', second-generation immigrants seem to incur a somewhat increased risk of finding themselves unemployed.
3. Furthermore, educational pathways and attainment have a significant impact on the labour market situation at the age of thirty. First, the 'long shadow' of lower secondary tracking still distinctly makes its mark almost one-and-half decades after the end of compulsory school: the odds of non-activity are significantly higher for respondents having attended a track with basic requirements (compared to those having attended a track with extended requirements). Second, as shown in previous analyses (Scharenberg et al., 2014; Sacchi & Meyer, 2016), discontinuous transitions from lower to upper secondary education prove to be a long-term risk factor: individuals who were not in a certifying education programme during the first post-compulsory year of education run a higher risk of not being in gainful occupation at the age of thirty. Third, we observe effects of educational attainment on labour market status at age thirty: compared to upper secondary vocational education and training (VET) graduates, and all else being equal, individuals with a tertiary B degree have higher odds of being gainfully active, while the opposite is true for those who hold no post-compulsory degree whatsoever.
4. As already highlighted in the descriptive part of this section, our results with regard to language region imply a markedly more difficult economic situation for young labour market entrants in southern Switzerland: individuals from Italian-speaking Switzerland are significantly less likely to be gainfully active and more likely to be unemployed than those from German-speaking Switzerland.

5 LEVEL OF EMPLOYMENT

Roughly one-quarter of the TREE cohort who is (exclusively) in employment works part-time (less than 90% of full-time employment). Among those working part-time, 17 per cent carry a 50 to 90 per cent workload and around eight per cent a workload of less than 50 per cent. The extent of employment varies strongly by gender, family situation and level of educational attainment.

FIGURE 5 *EXTENT OF EMPLOYMENT IN 2014 BY GENDER, PARENTHOOD, MIGRATION BACKGROUND, LANGUAGE REGION AND EDUCATIONAL ATTAINMENT*



The findings for the extent of employment by gender and family situation confirm and complement the findings for the employment situation in general (see p. 10ff.): the presence of children opens the gender gap. Only about one-quarter of Women with children work full-time. Forty-three per cent of working Women with children work part-time at between 50 and 90 per cent and another third less than 50 per cent.[10] We must also bear in mind that some 20 per cent of all Women with children are not economically active at all and thus have dropped out of the labour market altogether (at least temporarily; see Figure 4, p. 12). Men in turn seem to increase their workload once they have children: The share of men who work full-time and have children is significantly higher (93%) than the share of men who work full-time and do not have children (87%). Moreover, the rate of full-time employment among Women without children is still significantly lower (77%) than that of men without children (87%).

When considering the level of educational attainment, the rate of part-time employment ranges between 13 per cent (individuals with a tertiary B certificate) and 33 per cent (individuals with no post-compulsory certificate). In regard to migration background and language region, we see no statistically significant differences.

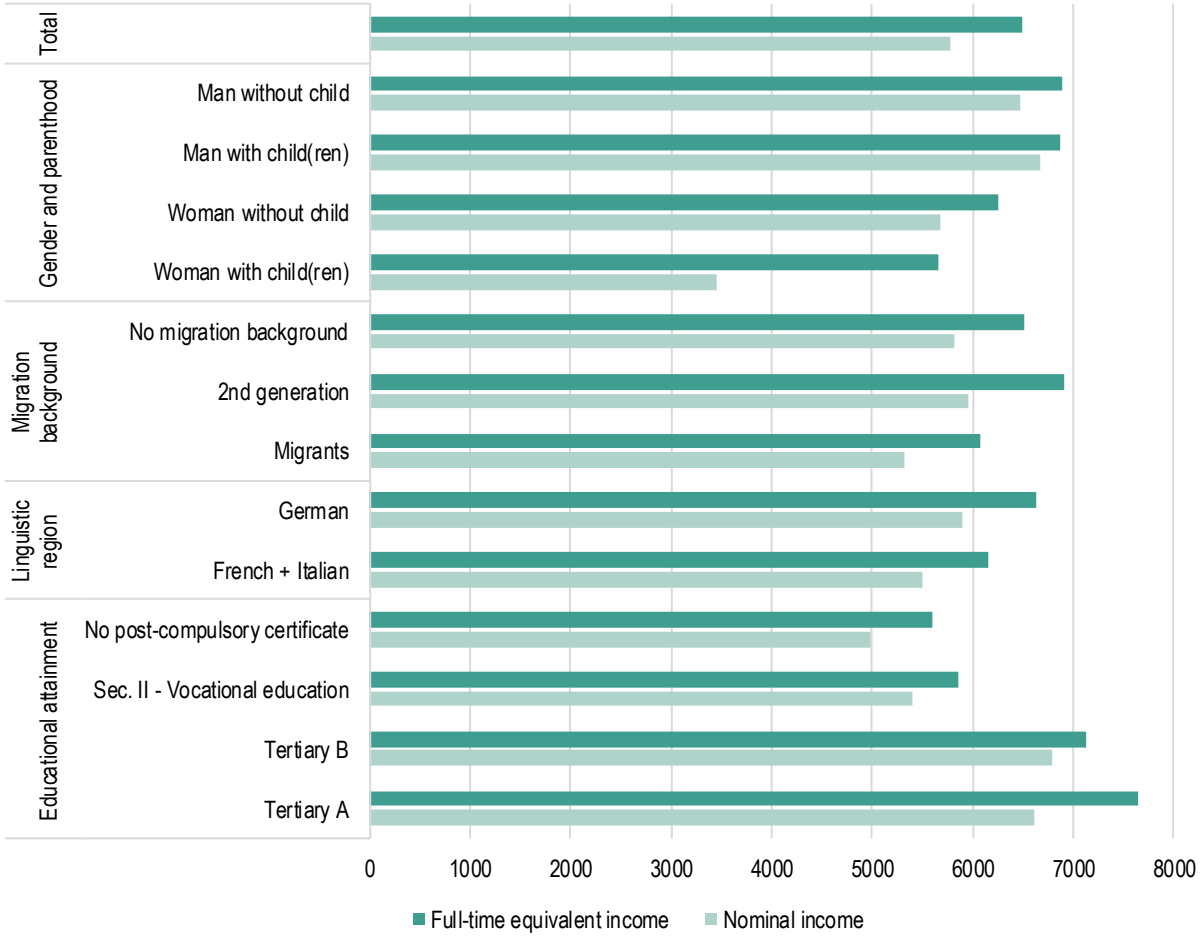
[10] In-depth analyses show that the observed mechanisms are still operative – although to a lesser degree – if we consider educational attainment; that is, they still have an impact even in families with highly educated women.

6 INCOME

At age thirty, the part of the TREE cohort which is (exclusively) gainfully employed earns a nominal gross monthly income of approximately 5,800 Swiss francs, which corresponds to approximately 6,500 Swiss francs calculated at full-time equivalents.[11] The median full-time equivalent income is somewhat lower at 6,150 Swiss francs. According to the FSO income survey, this figure compares to some 6,200 Swiss francs for the entire Swiss labour force.[12] We can thus conclude that the gainfully active part of the TREE cohort has roughly reached the overall income level of the Swiss workforce at a relatively early age.

We observe substantial disparities by gender, migration background, language region and educational attainment both with regard to real and full-time equivalent salaries.

FIGURE 6 *MONTHLY GROSS INCOME FROM EMPLOYMENT IN 2014 BY GENDER, PARENTHOOD, MIGRATION BACKGROUND, LANGUAGE REGION AND EDUCATIONAL ATTAINMENT; FULL-TIME EQUIVALENT AND NOMINAL*



[11] Nominal income: Income earned de facto, disregarding the level of occupation.
Full-time equivalent income: Income weighted by level of occupation.
For further methodological details regarding the calculation of salaries, see Appendix 4).

[12] https://www.bfs.admin.ch/bfs/de/home/statistiken/arbeit-erwerb/loehne-erwerbseinkommen-arbeitskosten/lohnniveau-schweiz/kaderloehne-tiefloehne.assetdetail.39777.html

Figure 6 highlights that, on average, the income gap (full-time equivalent) between men and women is at a full-time equivalent of 800 francs per month and even 1,500 francs when we consider nominal income (i.e., when not controlling for level of occupation; see also the section Level of Employment on page 15). Significant gender differences persist even if we take educational attainment into account.[13]

When breaking down income by educational attainment, we observe a span of average full-time equivalent income ranging from 5,600 francs (individuals without post-compulsory degree) to 7,600 francs (tertiary A graduates). The results imply that attaining a tertiary level degree pays off substantially in terms of wage gain. A look at the overall average yields the somewhat surprising observation that having an upper secondary VET degree does not seem to be associated with a significant wage gain compared to holding no post-compulsory degree at all. Both categories remain under the 6,000 francs threshold. However, we have to keep in mind that wage levels vary considerably among VET graduates depending on occupation.

Finally, wages and salaries also differ significantly by language region. On average, pay checks in the French- and Italian-speaking parts of Switzerland amount to 6,200 francs a month, 400 less than in the German-speaking part.

In the near future, we are planning to expand and deepen our analyses of wages and salaries from a multivariate perspective. One of our next publications will be devoted to statistically modelling the factors that determine wages. The planned model will extend beyond the factors described in this section to include others such as economic sector, field of occupation, professional status and experience. We are also planning in-depth analyses of gendered wage gaps that will pick up on earlier work in this area (Bertschy, Böni & Meyer, 2007; Bertschy et al., 2014).

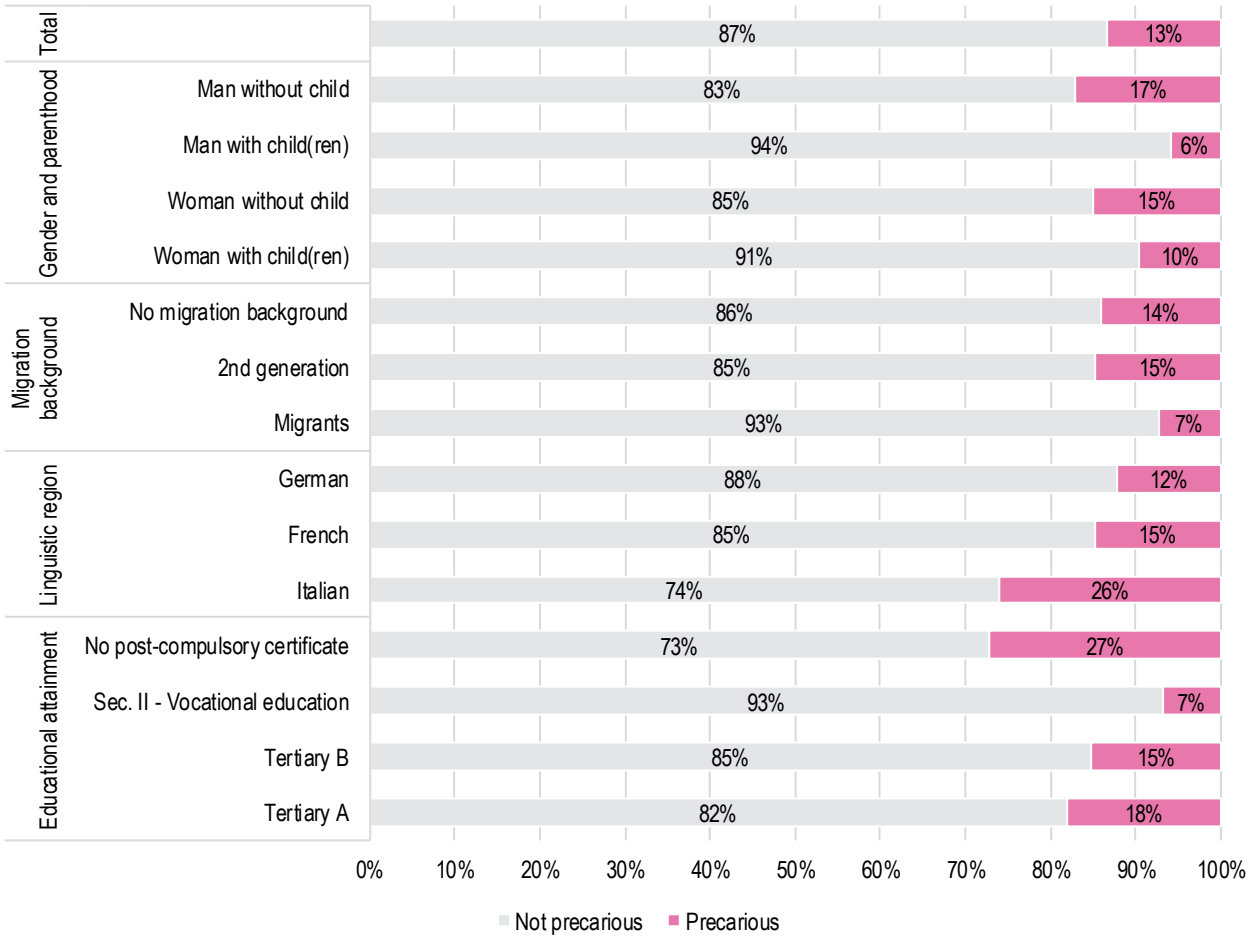
[13] There are, however, no statistically significant gender differences among graduates at the tertiary level.

7 PRECARIOUS EMPLOYMENT

In the following, we will consider underemployment, temporary employment and work on demand as indicators of precarious employment.[14] These forms of precarious employment are defined by drawing closely on the concepts used by the Swiss labour market survey (SAKE) and the State Secretariat for Economic Affairs (SECO) (Bertschy et al., 2007, p. 27; Ecoplan, 2003). Employment is called *temporary* when it is scheduled to end within one year's time. Individuals are considered *underemployed* when they wish to work longer hours than determined by their employment contract. People *work on demand* when they go to work only when their employer calls on them to do so.

The following analyses are confined to individuals who are exclusively employed and work at least eight hours per week. Because of incomplete data, we also excluded interns, the partially unemployed, the self-employed, family members working in the family business and individuals whose employment relationship could not be clearly determined. Please note that these exclusions will result in underestimating the rate of precariousness to some degree.

FIGURE 7: PRECARIOUS EMPLOYMENT IN 2014 BY GENDER, PARENTHOOD, MIGRATION BACKGROUND, LANGUAGE REGION AND EDUCATIONAL ATTAINMENT



[14] Other potential forms of precariousness such as (false) self-employment, (false) internships, marginal employment and so on were not considered for lack of sufficiently accurate data (for an international comparison, see, e.g., Broughton et al. 2016).[15] The large majority with a Swiss Federal Certificate of Competence (*Eidgenössisches Fähigkeitszeugnis, EFZ*).

In total, approximately five per cent of the respondents in employment work on a fixed-term contract. Some two per cent work on demand. Five per cent of the respondents can be considered underemployed—that is, they are involuntarily restricted to working less than they wish or would prefer working full-time. Hence, roughly 13 per cent of the respondents in employment are affected by at least one form of precariousness (see Figure 7). This overall rate corresponds very well with the findings from other sources (see, e.g., Sacchi & Salvisberg, 2012: 22)

When we consider gender and family situation, what stands out in particular is the extraordinary low rate of precariousness among men with children (6%). This holds for women as well: Women with children are much less frequently subject to precarious employment than Women without. In the latter case, however, the difference is statistically not significant.

A look at migration background reveals that first-generation immigrants are less often in precarious employment compared to the native population and the "secondos" (7% vs. 14–15%).

In regard to the language regions, however, the analysis shows that the labour market situation is much more difficult in Italian-speaking than in other parts of Switzerland. There, the rate of precarious employment exceeds 25 per cent and is therefore roughly twice the rate found in German- and French-speaking Switzerland.

As concerns educational attainment, we can see that the absence of a post-compulsory degree bears a strongly increased risk of being in precarious employment: The respective rate of incidence is 27 per cent, more than double the overall rate (13%) and four times higher than the rate of those holding an upper secondary VET degree (7%). The rates of precarious employment among graduates from tertiary education are in between these two extremes, but the differences to either side are not statistically significant.

8 CONCLUSION AND OUTLOOK

The present report of findings has provided an overview of the labour market situation of the (first) TREE cohort at an average age of 30 years, that is, 14 years after the end of compulsory education. Primarily, it draws on data from the last—ninth—panel wave in 2014 but also considers data from the first eight panel waves (2001–2010), especially in the synopsis in section 3.

Fourteen years after leaving compulsory education, the majority of the cohort seems to have made the transition from education to employment. Nevertheless, about one-sixth of the TREE cohort is still in education at this point in time—primarily at the tertiary level. This documents with impressive clarity the extent to which today's transition from education to employment extends well into the third decade of life and sometimes even beyond.

Sections 4 to 8 have focused on the four labour market indicators 'general employment situation', 'extent of employment', 'income from employment' and 'precarious employment'. The analyses considered the attributes gender, migration background, language region and educational attainment.

General employment situation: Approximately 90 per cent of the TREE cohort were in employment in 2014; three-quarters were exclusively employed and one in eight worked while pursuing education or training at the same time. Some three per cent were unemployed, and roughly eight per cent fell into the category of 'not economically active' (for definitions, see footnote 4 , p.11). Women were significantly less frequently gainfully employed than men (88% vs. 94%). Second-generation immigrants (secondos) were much less frequently in employment than first generationers. Moreover, the second generation was affected by unemployment to a significantly higher degree than individuals with no migration origin. We could also observe a markedly higher risk of unemployment among young adults in Italian-speaking Switzerland. As for the highest level of educational attainment, it strikes the eye that the holders of a tertiary B certificate have a particularly high employment rate and low risk of unemployment.

Extent of employment: The employment situation of the 30-year-olds is very closely associated with their gender and family situation. The gap widens especially when there are children: Whereas more than 90 per cent of the gainfully employed men with children work full-time, the same is true for only nearly a quarter of the gainfully employed Women with children. Some additional 20 per cent of all Women with children have dropped out of the labour market altogether (not economically active, at least temporarily).

Income from employment: Pronounced gender differences are also apparent when it comes to income. Women earn a nominal monthly average of 1,500 Swiss francs less than men. When we control for extent of employment (full-time equivalent income), the difference still amounts to roughly 800 francs. As for educational attainment, our analyses reveal a marked wage advantage for those who have acquired a tertiary certificate. Such a certificate yields an average monthly full-time wage of more than 7,000 francs. By comparison, the figures are lower than 6,000 francs on average for individuals whose highest educational attainment is an upper secondary certificate.

Precarious employment: Approximately 13 per cent of those working do so under conditions of precarious employment that is, they are underemployed, employed on a fixed-term contract or work on demand. Here, too, we observe pronounced differences by educational attainment: Young adults with no post-compulsory certificate are four times as likely (at 27%) to end up in precarious employment than those with an upper secondary VET certificate (7%). In Italian-speaking Switzerland, the rate of precarious employment exceeds 25 per cent and is therefore roughly twice the rate found in German- and French-speaking Switzerland. In summary, we can state the following:

At an average age of 30 years, the observed cohort mostly finds itself in an overall favourable labour market situation. The general rate of employment is high while unemployment is low, and, with a median income exceeding 6,000 francs per month (gross full-time equivalent), the TREE cohort has already managed to reach the income level of the Swiss workforce overall.

In view of the issue at the heart of the TREE project—the transition from and the connections between education and employment—our analyses have confirmed that education pays off or, conversely, that lacking a post-compulsory certificate entails substantially enhanced risks in the labour market. The group of young people affected by this risk (approx. 10% of the cohort under study) is less frequently in employment and much more frequently in precarious employment compared to their 'educationally certified' peers.

In a positive vein, however, we can state that four in five individuals with no post-compulsory certificate are in employment at the age of 30 and earn an average (full-time equivalent) income clearly exceeding 5,000 francs per month. Moreover, our longitudinal perspective suggests (see p. 8f.) that a substantial part of this group has proven capable of holding its ground in the labour market over several years now.

What stands out at the upper end of the educational pyramid—among the graduates of tertiary education—is, apart from their high employment rate, above all the considerable income advantage that they have over those who lack a tertiary certificate; the differential between the two most extreme categories (with versus without a tertiary A certificate) is an average 2,000 francs per month (gross full-time equivalent). This suggests a substantial return on educational investment for those who manage to take their educational career to the tertiary level (and complete it).

What is the bottom line for those who have ended their educational careers by graduating from basic upper secondary VET?[15] Compared to those persons without a post-compulsory certificate, VET graduates have a higher employment rate and a lower share of precarious employment. Nevertheless, in terms of average income, the two groups do not differ significantly overall. Looking at average income across all VET graduates, however, levels the substantial differences in the pay range between occupations. All in all, our findings offer some evidence suggesting that completing upper secondary (vocational) education no longer provides the same protection in the labour market than it once did and that education to provide such protection has now shifted to the tertiary level.

Another important result of our analyses is that past transitions within the education system cast a 'long shadow' on the labour market situation at age 30. Our model predicts that two earlier transitions increase the risk of having dropped out of the labour market by the age of 30 (see p. 13 in the running text and p. 31 for the complete model): attending school types providing lower secondary education limited to basic academic requirements[16] on the one hand and attending intermediate or preparatory training programmes or some other form of interim solution in the transition from lower to upper secondary education on the other.

The most important factor by far that this report has shown to affect the employment situation at age 30 is gender—in combination with the family situation. Our findings testify beyond any doubt to the extent to which the occupational careers of men and women still diverge as well as to the persistence of this situation. Upon birth of a child (at the latest), the oft-proven "gender gap" begins to open up, also between the female and male school-leavers among our cohort. Whereas almost all men with children work full-time, about one in five Women with children drops out of the labour market completely (at least temporarily, i.e., is not economically active). Three-quarters of working mothers work part-time; in nearly half of these cases at less than 50 per cent of full-time employment. The mechanisms observed here remain operative even if we control for educational attainment.

Our findings further show that women earn significantly less than men. The "wage gap" between the men and women of the TREE cohort lies at 800 Swiss francs per month (full-time equivalent) at the age of 30, which

[15] The large majority with a Swiss Federal Certificate of Competence (*Eidgenössisches Fähigkeitszeugnis, EFZ*).

[16] Depending on the canton in question, this can, for instance, be *Realschule*, *Sek C* or *cycle d'orientation du type 'pratique'*.

amounts to about an eighth of the cohort's overall average income. Even though in-depth analyses of the "unexplained"[17] wage gap at the age of 30 have yet to be conducted, studies based on past TREE data have determined that women are already subject to wage discrimination at the point of entering the workforce (see, e.g., Bertschy et al., 2014).

Finally, mention needs to be made of a rather surprising finding on first glance: our analyses could find no evidence of a (direct) influence of social background on the labour market situation at 30 years of age. Of course, this does not mean that no such influence exists. What it means is rather that, at this point of observation, social background has an indirect impact, for instance, via highest educational attainment.

The findings presented in this report are neither complete nor conclusive. Further in-depth analyses intend to provide insight into the influence of factors hitherto not considered (such as occupation trained for, economic sector and industry, work experience or firm characteristics) on income or the employment situation. In addition to these, we aim to investigate other indicators of labour market integration such as job–skills (mis-)match, change of job and/or occupation, opportunities for career advancement, continuing education or job satisfaction.

Since September 2016, complete monthly data covering all employment episodes among the TREE respondents since 2003 has been available for analysis. In a longitudinal perspective, this will make it possible to trace career paths and their determinants in a differentiated and detailed manner over a period of twelve years to date. For 2019, we are also planning another—the tenth—follow-up survey of the cohort, which will have reached an average age of 35 years by then. By that time, the first data will be available for the second TREE cohort, the survey of which was launched in 2016. This latter data will provide the first opportunity ever to compare the transition from school to employment and adulthood in Switzerland.

[17] This refers to that part of the wage gap that cannot be explained by differences in qualifications, demands, position in the hierarchy, seniority, economic sector and other attributes.

APPENDICES

Appendix 1 Descriptive analyses

TABLE 1 EMPLOYMENT STATUS IN 2014 BY GENDER, PARENTHOOD, MIGRATION BACKGROUND, LANGUAGE REGION AND EDUCATIONAL ATTAINMENT

	Employed		Unemployed		Not economically active	
	Share in %	Confidence interval	Share in %	Confidence interval	Share in %	Confidence interval
Total (N=3142)	90.8	[88.4;92.7]	3.5	[2.5;4.9]	5.7	[4.1;8.0]
Gender and parenthood						
Men without children	91.6 (See Table 2)	[87.9;94.3]	5.7 (See Table 2)	[3.6;8.9]	2.7 (See Table 2)	[1.4;5.3]
Men with children	99.8	[98.5;100]	0.2	[0.0;1.5]	0	[-,-]
Women without children	93.8	[83.7;90.9]	4.2	[2.2;7.6]	2.1	[1.7;3.7]
Women with children	78.6	[69.8;85.4]	1.0	[0.4;2.1]	20.4	[13.7;29.3]
Migration background						
No migration background	91.0 a	[88.2;93.2]	2.7 a	[1.7;4.2]	6.3 a	[4.4;9.0]
2nd generation immigrants	84.1 a	[73.2;91.1]	10.0 b	[5.1;18.7]	6.0 a, b	[1.9;16.9]
1st generation immigrants	95.5 b	[92.2;97.4]	2.9 a	[1.5;5.6]	1.7 b	[0.7;3.8]
Language region						
German-speaking Switzerland	91.8 a	[88.5;94.2]	2.4 a	[1.3;4.5]	5.8 a	[3.7;8.9]
French-speaking Switzerland	89.6 a	[86.0;92.4]	5.0 b	[3.3;7.6]	5.4 a	[3.3;8.7]
Italian-speaking Switzerland	80.9 b	[75.2;85.5]	11.8 c	[8.0;17.1]	4.5 a	[4.5;11.7]
Educational attainment						
No post-compulsory certificate	81.5 (See Table 3)	[68.6;89.9]	8.1 (See Table 3)	[3.6;17.1]	10.4 (See Table 3)	[4.3;22.9]
Upper secondary VET	89.9	[86.1;92.8]	2.9	[1.6;5.3]	7.1	[4.6;10.9]
Tertiary B	97.6	[95.9;98.6]	1.1	[0.6;2.2]	1.3	[0.6;2.8]
Tertiary A	93.0	[90.4;94.9]	4.0	[2.5;6.4]	3.0	[2.0;4.6]

Explanatory note on Table 1:

The percentages in each row add up to 100 per cent (minor differences are due to rounding).

Differences between the categories of a specific attribute are statistically significant ($p < .05$) if they are marked by different letters (see also the example below of how to read the table). The significances for attributes with more than three categories (gender and parenthood as well as educational attainment) are provided in separate tables (Tables 2 and 3 on the next page). Parameter estimates were performed on the weighted sample, using suitable methods to properly model the complex structure of the PISA 2000/TREE sample.[18] The parametric significance tests were further complemented by exact tests. The lower and upper bounds of the confidence intervals ($p < .05$) are provided in square brackets.

Examples of how to read the table:

In Italian-speaking Switzerland, unemployment is estimated to be at 11.8 per cent. The confidence interval ($p < .05$) is between eight and 17.1 per cent. The letter c following the value indicates that the difference between this value and the respective value for French-speaking (5.0%) and German-speaking Switzerland (2.4%) is statistically significant. The different letters (a and b) following the values for German- and French-speaking Switzerland signify that the differences in the values for the two language regions are also statistically significant. The situation is different for the employment rate by language region. Whereas Italian-speaking Switzerland (b) displays significant differences to the other two language regions (a), German- and French-speaking Switzerland show no significant differences in this respect (both a).

[18] For instance, "survey set" in STATA or "complex samples" in SPSS.

TABLE 2 *EMPLOYMENT STATUS IN 2014 BY GENDER AND PARENTHOOD: STATISTICAL SIGNIFICANCES*

Employed		(1)	(2)	(3)	(4)
(1)	Men without children				
(2)	Men with children	*			
(3)	Women without children	n.s.	*		
(4)	Women with children	*	*	*	

*: Differences are significant ($p < .05$).
n.s.: Differences are not significant ($p \geq .05$).

Unemployed		(1)	(2)	(3)	(4)
(1)	Men without children				
(2)	Men with children	*			
(3)	Women without children	n.s.	*		
(4)	Women with children	*	n.s.	*	

*: Differences are significant ($p < .05$).
n.s.: Differences are not significant ($p \geq .05$).

Not economically active		(1)	(2)	(3)	(4)
(1)	Men without children				
(2)	Men with children	*			
(3)	Women without children	n.s.	*		
(4)	Women with children	*	*	*	

*: Differences are significant ($p < .05$).
n.s.: Differences are not significant ($p \geq .05$).

TABLE 3 *EMPLOYMENT STATUS IN 2014 BY EDUCATIONAL ATTAINMENT: STATISTICAL SIGNIFICANCES*

Employed		(1)	(2)	(3)	(4)
(1)	No post-compulsory certificate				
(2)	Upper secondary VET	n.s.:			
(3)	Tertiary B	*	*		
(4)	Tertiary A	*	n.s.	*	

*: Differences are significant ($p < .05$).
n.s.: Differences are not significant ($p \geq .05$).

Unemployed		(1)	(2)	(3)	(4)
(1)	No post-compulsory certificate				
(2)	Upper secondary VET	n.s.			
(3)	Tertiary B	*	n.s.		
(4)	Tertiary A	n.s.	n.s.	*	

*: Differences are significant ($p < .05$).
n.s.: Differences are not significant ($p \geq .05$).

Not economically active		(1)	(2)	(3)	(4)
(1)	No post-compulsory certificate				
(2)	Upper secondary VET	n.s.			
(3)	Tertiary B	*	*		
(4)	Tertiary A	n.s.	*	*	

*: Differences are significant ($p < .05$).
n.s.: Differences are not significant ($p \geq .05$).

TABLE 4 *EXTENT OF EMPLOYMENT IN 2014 BY GENDER, PARENTHOOD, MIGRATION BACKGROUND, LANGUAGE REGION AND EDUCATIONAL ATTAINMENT*

	Extent of employment <50%		Extent of employment 50–89%		Extent of employment 90–100%	
	Share	CI	Share	CI	Share	CI
Total (N=2758)	8.3	[6.5;10.5]	17.0	[14.5;19.9]	74.7	[71.4;77.7]
Gender and parenthood						
Men without children	4.1 (See Table 5)	[2.5;6.6]	8.7 (See Table 5)	[5.3;13.8]	87.3 (See Table 5)	[82.0;91.2]
Men with children	0.2	[0.1;0.6]	6.8	[2.8;15.8]	93.0	[84.1,97.1]
Women without children	4.7	[2.7;8.1]	18.8	[14.6;23.9]	76.5	[71.2;81.1]
Women with children	33.4	[24.3;44.0]	42.6	[32.8;53.1]	24.0	[15.1;35.9]
Migration background						
No migration background	9.1 a	[7.1;11.8]	15.6 a	[12.7;18.9]	75.3 a	[71.4;78.8]
2nd generation immigrants	3.7 b	[0.9;14.9]	21.6 a	[12.9;33.8]	74.7 a	[62.1;84.2]
1st generation immigrants	6.2 a, b	[1.3;24.4]	23.0 a	[14.2;35.0]	70.9 a	[58.1;81.0]
Language region						
German-speaking Switzerland	9.9 a	[7.6;12.9]	14.9 a	[11.9;18.5]	75.2 a	[70.9;79.0]
French-speaking Switzerland	3.8 b	[2.8;5.2]	23.1 b	[18.5;28.5]	73.0 a	[67.7;77.8]
Italian-speaking Switzerland	5.5 b	[3.8;8.0]	17.8 a	[13.7;22.9]	76.7 a	[71.5;81.1]
Educational attainment						
No post-compulsory certificate	10.4 (See Table 6)	[2.3;36.1]	22.1 (See Table 6)	[9.1;44.4]	67.5 (See Table 6)	[44.6;84.3]
Upper secondary VET	7.6	[4.6;12.2]	12.7	[9.5;16.9]	79.7	[73.4;84.8]
Tertiary B	3.8	[2.3;6.2]	8.8	[5.4;14.0]	87.4	[81.8;91.4]
Tertiary A	6.1	[4.2;8.6]	19.4	[15.0;24.8]	74.5	[69.4;79.0]

For an explanatory note on this table, see Table 1, p. 23.

TABLE 5 *EXTENT OF EMPLOYMENT IN 2014 BY GENDER AND PARENTHOOD: STATISTICAL SIGNIFICANCES*

Extent of employment <50%		(1)	(2)	(3)	(4)
(1)	Men without children				
(2)	Men with children	*			
(3)	Women without children	n.s.	*		
(4)	Women with children	*	*	*	

*: Differences are significant ($p < .05$).
n.s.: Differences are not significant ($p \geq .05$).

Extent of employment 50–89%		(1)	(2)	(3)	(4)
(1)	Men without children				
(2)	Men with children	n.s.			
(3)	Women without children	*	*		
(4)	Women with children	*	*	*	

*: Differences are significant ($p < .05$).
n.s.: Differences are not significant ($p \geq .05$).

Extent of employment 90–100%		(1)	(2)	(3)	(4)
(1)	Men without children				
(2)	Men with children	n.s.			
(3)	Women without children	*	*		
(4)	Women with children	*	*	*	

*: Differences are significant ($p < .05$).
n.s.: Differences are not significant ($p \geq .05$).

TABLE 6 *EXTENT OF EMPLOYMENT IN 2014 BY EDUCATIONAL ATTAINMENT: STATISTICAL SIGNIFICANCES*

Extent of employment <50%		(1)	(2)	(3)	(4)
(1)	No post-compulsory certificate				
(2)	Upper secondary VET	n.s.			
(3)	Tertiary B	n.s.	*		
(4)	Tertiary A	n.s.	n.s.	*	

*: Differences are significant ($p < .05$).
n.s.: Differences are not significant ($p \geq .05$).

Extent of employment 50–89%		(1)	(2)	(3)	(4)
(1)	No post-compulsory certificate				
(2)	Upper secondary VET	n.s.			
(3)	Tertiary B	n.s.	n.s.		
(4)	Tertiary A	n.s.	*	*	

*: Differences are significant ($p < .05$).
n.s.: Differences are not significant ($p \geq .05$).

Extent of employment 90–100%		(1)	(2)	(3)	(4)
(1)	No post-compulsory certificate				
(2)	Upper secondary VET	n.s.			
(3)	Tertiary B	*	*		
(4)	Tertiary A	n.s.	*	*	

*: Differences are significant ($p < .05$).
n.s. Differences are not significant ($p \geq .05$).

TABLE 7 *AVERAGE MONTHLY INCOME IN 2014, GROSS FULL-TIME EQUIVALENT, BY GENDER, PARENTHOOD, MIGRATION BACKGROUND, LANGUAGE REGION AND EDUCATIONAL ATTAINMENT: ESTIMATES, STANDARD ERRORS AND CONFIDENCE INTERVALS*

	Estimates	Standard errors (SE)	Confidence interval (lower bound; upper bound)
Total (N=2580)	6,495	87	[6324;6666]
Gender and parenthood			
Men without children	6,887 (See Table 8)	173	[6547;7227]
Men with children	6,878	232	[6421;7336]
Women without children	6,256	112	[6036;6477]
Women with children	5,669	299	[5080;6258]
Migration background			
No migration background	6,507 a, b	103	[6305;6709]
2nd generation immigrants	6,921 a	368	[6193;7649]
1st generation immigrants	6,080 b	266	[5553;6607]
Language region			
German-speaking Switzerland	6,629 a	111	[6410;6847]
French- and Italian-speaking Switzerland	6,152 b	123	[5911;6394]
Educational attainment			
No post-compulsory certificate	5,607 (See Table 9)	461	[4671;6542]
Upper secondary VET	5,849	143	[5567;6131]
Tertiary B	7,122	301	[6527;7716]
Tertiary A	7,641	231	[7186;8096]

Amounts in Swiss francs are provided in the left column.

Within a given cell of the table, differences between subgroups are statistically significant (p < .05) if they are marked by different letters (a, b, c). The confidence intervals are indicated in brackets. The upper and lower bounds are provided for each figure.

TABLE 8 *AVERAGE MONTHLY INCOME IN 2014, GROSS FULL-TIME EQUIVALENT, BY GENDER AND PARENTHOOD: STATISTICAL SIGNIFICANCES*

		(1)	(2)	(3)	(4)
(1)	Men without children				
(2)	Men with children	n.s.			
(3)	Women without children	*	*		
(4)	Women with children	*	*	*	

*: Differences are significant ($p < .05$).

n.s.: Differences are not significant ($p \geq .05$).

TABLE 9 *AVERAGE MONTHLY INCOME IN 2014, GROSS FULL-TIME EQUIVALENT, BY EDUCATIONAL ATTAINMENT: STATISTICAL SIGNIFICANCES*

		(1)	(2)	(3)	(4)
(1)	No post-compulsory certificate				
(2)	Upper secondary VET	n.s.			
(3)	Tertiary B	*	*		
(4)	Tertiary A	*	*	n.s.	

*: Differences are significant ($p < .05$).

n.s.: Differences are not significant ($p \geq .05$).

TABLE 10 *AVERAGE MONTHLY INCOME IN 2014, GROSS NOMINAL, BY GENDER, PARENTHOOD, MIGRATION BACKGROUND, LANGUAGE REGION AND EDUCATIONAL ATTAINMENT: ESTIMATES, STANDARD ERRORS AND CONFIDENCE INTERVALS*

	Estimates	Standard errors (SE)	Confidence interval (lower bound; upper bound)
Total (N=2584)	5,782	93	[5598;5965]
Gender and parenthood			
Men without children	6,470 (See Table 11)	155	[6164;6775]
Men with children	6,671	253	[6171;7172]
Women without children	5'683	126	[5435;5931]
Women with children	3'444	198	[3053;3834]
Migration background			
No migration background	5,828 a	109	[5613;6043]
2nd generation immigrants	5,951 a	372	[5215;6687]
1st generation immigrants	5,323 a	262	[4804;5842]
Language region			
German-speaking Switzerland	5,895 a	121	[5656;6133]
French- and Italian-speaking Switzerland	5,493 b	127	[5242;5743]
Educational attainment			
No post-compulsory certificate	4,977 (See Table 12)	482	[3999;5956]
Upper secondary VET	5,394	148	[5102;5686]
Tertiary B	6,784	317	[6158;7410]
Tertiary A	6,620	136	[6352;6889]

For an explanatory note on this table, see Table 1, p. 23.

TABLE 11 *AVERAGE MONTHLY INCOME IN 2014, GROSS NOMINAL, BY GENDER AND PARENTHOOD: STATISTICAL SIGNIFICANCES*

		(1)	(2)	(3)	(4)
(1)	Men without children				
(2)	Men with children	n.s.			
(3)	Women without children	*	*		
(4)	Women with children	*	*	*	

*: Differences are significant ($p < .05$).

n.s.: Differences are not significant ($p \geq .05$).

TABLE 12 *AVERAGE MONTHLY INCOME IN 2014, GROSS NOMINAL, BY EDUCATIONAL ATTAINMENT: STATISTICAL SIGNIFICANCES*

		(1)	(2)	(3)	(4)
(1)	No post-compulsory certificate				
(2)	Upper secondary VET	n.s.			
(3)	Tertiary B	*	*		
(4)	Tertiary A	*	*	n.s.	

*: Differences are significant ($p < .05$).

n.s.: Differences are not significant ($p \geq .05$).

TABLE 13 *PRECARIOUS EMPLOYMENT IN 2014 BY GENDER, PARENTHOOD, MIGRATION BACKGROUND, LANGUAGE REGION AND EDUCATIONAL ATTAINMENT: ESTIMATES AND CONFIDENCE INTERVALS*

	Not in precarious employment		In precarious employment	
	Row per cent	Confidence interval	Row per cent	Confidence interval
Total (N=2181=100%)	86.6	[83.2;89.4]	13.4	[10.6;16.8]
Gender and parenthood				
Men without children	83.0	[75.8;88.4]	17.0	[11.6;24.2]
Men with children	94.1	[88.6;97.1]	5.9	[2.9;11.3]
Women without children	85.0	[79.7;89.1]	15.0	[10.9;20.3]
Women with children	90.5	[878.7;96.1]	9.5	[3.9;21.3]
Migration background				
No migration background	85.9 a	[81.9;89.2]	14.1 a	[10.8;18.1]
2nd generation immigrants	85.3 a	[74.4;92.1]	14.7 a, b	[7.9;25.6]
1st generation immigrants	92.8 a	[87.9;95.8]	7.2 b	[4.2;12.1]
Language region				
German-speaking Switzerland	87.8 a	[83.3;91.3]	12.2 a	[8.8;16.7]
French-speaking Switzerland	85.2 a	[79.3;89.6]	14.8 a	[10.4;20.7]
Italian-speaking Switzerland	74.1 b	[69.0;78.7]	25.9 b	[21.3;31.1]
Educational attainment				
No post-compulsory certificate	72.9	[49.4;88.1]	27.1	[11.8;50.6]
Upper secondary VET	93.4	[90.4;95.4]	6.6	[4.6;9.6]
Tertiary B	84.9	[73.5;91.9]	15.1	[8.1;26.4]
Tertiary A	82.0	[75.7;86.9]	18.0	[13.0;24.3]

(See Table 14)

(See Table 15)

For an explanatory note on this table, see Table 1, p. 23.

TABLE 14 *PRECARIOUS EMPLOYMENT IN 2014 BY GENDER AND PARENTHOOD: STATISTICAL SIGNIFICANCES*

		(1)	(2)	(3)	(4)
(1)	Men without children		*	n.s.	n.s.
(2)	Men with children	*		*	n.s.
(3)	Women without children	n.s.	n.s.		n.s.
(4)	Women with children	n.s.	*	n.s.	

Below the diagonal: not precarious

Above the diagonal: precarious

*: Differences are significant ($p < .05$).

n.s.: Differences are not significant ($p \geq .05$).

TABLE 15 *PRECARIOUS EMPLOYMENT IN 2014 BY EDUCATIONAL ATTAINMENT: STATISTICAL SIGNIFICANCES*

		(1)	(2)	(3)	(4)
(1)	No post-compulsory certificate		*	*	n.s.
(2)	Upper secondary VET	*		n.s.	*
(3)	Tertiary B	*	n.s.		*
(4)	Tertiary A	n.s.	*	n.s.	

Below the diagonal: not precarious

Above the diagonal: precarious

*: Differences are significant ($p < .05$).

n.s.: Differences are not significant ($p \geq .05$).

Appendix 2 Multivariate models

TABLE 16 MULTINOMIAL REGRESSION MODEL FOR PREDICTING EMPLOYMENT STATUS IN 2014

	(1) Employed		(2) Unemployed		(3) Not economically active	
	AME	SE	AME	SE	AME	SE
Gender and parenthood[1]						
Women with one children	--0.08 +	(0.04)	-0.03 *	(0.01)	0.11 **	(0.04)
Women with two or more children	--0.22 **	(0.07)	-0.04 *	(0.01)	0.26 **	(0.06)
Men without children	--0.04 +	(0.02)	0.03	(0.02)	0.01	(0.01)
Men with one child	0.06 **	(0.02)	-0.04 **	(0.01)	-0.02 **	(0.01)
Men with two or more children	0.06 **	(0.01)	-0004 **	(0.01)	-0.02 **	(0.01)
Migration background[2]						
2nd generation immigrants	-0.05	(0.04)	0.05 +	(0.03)	0.00	(0.03)
1st generation immigrants	0.06 **	(0.02)	0	(0.01)	-0.06 **	(0.01)
School type attended at lower secondary level[3]						
Basic academic requirements	0.02	(0.02)	0.01	(0.02)	-0.04 *	(0.02)
No tracking	-0.07 +	(0.04)	0.02	(0.02)	0.05	(0.05)
Educational status 2001[4]						
Not in certifying education	-0.07 *	(0.03)	0.03	(0.02)	0.04 *	(0.02)
Educational attainment 2014[5]						
No post-compulsory certificate	-0.09 +	(0.05)	0.07	(0.04)	0.02	(0.04)
General upper secondary education	-0.03	(0.04)	0.03	(0.03)	0	(0.02)
Tertiary B	0.07 **	(0.02)	-0.01	(0.01)	-0.05 **	(0.01)
Tertiary A	0.01	(0.02)	0.02	(0.01)	-0.03 +	(0.02)
Language region[6]						
French-speaking Switzerland	-0.02	(0.02)	0.02	(0.01)	0	(0.02)
Italian-speaking Switzerland	-0.13 **	(0.03)	0.08 **	(0.03)	0.06 **	(0.02)
N	2622					
Pseudo R2	0.247					

Significances: * $p < 0.05$, ** $p < 0.01$, + $p < 0.10$. Reported average marginal effects (AME).

In brackets: standard errors (SE)

Reference categories: [1]Women without children, [2]no migration background, [3]*Progymnasium* and extended academic requirements, [4]in certifying education, [5]upper secondary VET, [6]German-speaking Switzerland.

Note: All calculations were performed on weighted samples to account for sample attrition across the various panel waves (Sacchi, 2011).

Appendix 3 Operationalisation of variables

Variable	Definition
Gender and parenthood	Source: TREE & PISA 2000 Variables: t9childnum (T9) Sex (PISA 2000) Categories: 1 Women without children 2 Women with one child 3 Women with two or more children 4 Men without children 5 Men with one child 6 Men with two or more children
Educational status	Source: TREE Variable: t1educ22 (T1) Categories: 0 In a certifying programme of upper secondary education (i.e., VET, specialised schools for business, commerce and trades, teacher college, advanced-track upper secondary education for university entrance qualification) 1 Not in a certifying programme of upper secondary education (i.e., additional year of schooling, preparatory training programmes, language stay or other or no programme of upper secondary education).
Educational attainment	Highest educational attainment by 2014 Source: TREE panel waves 1–9 Variables: c9crtyp201 - c9crtyp204 (upper secondary certificates); c9crtyp301 - c9crtyp305 (tertiary certificates) Categories: 0 No VET certificate 2 Upper secondary (vocational education) 30 Tertiary B 31 Tertiary A
Migration background	Source: PISA 2000 Variables: st16q01 (respondent's country of birth) st16q02 (mother's country of birth) st16q03 (father's country of birth) Categories: 0 No migration background 1 Second generation immigrants 2 First generation immigrants Note: Persons born in Switzerland who have at least one Swiss parent are included in the group of Swiss 'natives' with no migration background. Persons born in Switzerland whose parents were born abroad belong to the group of second generation immigrants. Persons born abroad who immigrated to Switzerland are classified as first generation immigrants.
Language region	Source: PISA 2000 Variable: reg_ling Categories: 1 German-speaking 2 French-speaking 3 Italian-speaking
Type of school	Source: PISA 2000 Variable: typ Categories: 0 *Progymnasium* and advanced track leading to baccalaureate schools and advanced-track upper sec. education 1 Basic academic requirements 2 No tracking Note: Refers to the type of lower secondary school attended at the time of the PISA survey (2000).

Appendix 4 Some methodological remarks on the calculation of income

Income was estimated based on all gainful occupations mentioned by respondents at the time of the TREE 2014 survey. The valid sample (N=2,583, unweighted) on which the results of this report are based represent 82 per cent of the respondents in 2014 (i.e., those who mentioned at least one income). For every gainful activity, respondents could indicate gross or net income either by hour, by month or by year (including a 13th salary and bonuses and other fringe benefits). 68 per cent of the reported incomes are gross, 32 per cent are net.

If an income was reported as net, we estimated the corresponding gross income differently for employees and for self-employed workers. In Switzerland, rates of social security deductions vary substantially by age, job status (employee or self-employed), annual income, company and canton. For employees' incomes, we used a single deduction rate of 12.2 per cent, which corresponds to the average contribution rate of 25–34-year-old employees in Switzerland in 2008 (as calculated by the Swiss Labour Force Survey using Swiss Earnings Structure Survey data; (BFS, 2010)[19]. For self-employed workers, we used the national progressive deduction rates that were applied to determine the social security contributions paid by self-employed workers in 2014. Social security deduction rates for self-employed individuals vary between 5 and 10 per cent depending on overall income (AVS/AI, 2013).[20] Once all net income (of both the employees and the self-employed) had been estimated to gross, all incomes were summed up and transformed to full-time equivalent (42h/week). Around 89 per cent of the sample for which we have information on income pursue only one gainful activity and 11 per cent more than one (up to five simultaneous gainful occupations were reported). 71 per cent of the sample work full-time and 29 per cent part-time (unweighted).

These results are based on estimations of incomes and cannot be considered as the real monthly income for many reasons. First, we assumed everyone to be working full-time to improve comparability of incomes. Thus, for instance, variations in working time by gender (which are known to be important) have no impact on incomes. Second, owing to the survey design, we only have income data on levels of employment exceeding 8 hours per week. Eight per cent of the 2014 TREE sample worked, but their level of occupation remained below this threshold. Therefore, we must keep in mind that the analyses in this publication tend to underestimate the extent of precarious employment among individuals with low levels of occupation. Third, given the variation of deduction rates in Switzerland, it is impossible to calculate precise gross and net incomes. To minimise imprecision due to inaccuracies in the conversion of gross to net incomes, we decided to use gross incomes as the reference, as two out of three respondents reported their income as gross. Fourth, we only have data on incomes at the time of the survey. Obviously, extrapolation of this data to annual income is subject to errors if income is not steady throughout the year.

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ISBN 978-3-905854-11-4

Proposal for citation:

Gomensoro, A., Meyer, T., Hupka-Brunner, S., Jann, B., Müller, B., Oesch, D., Rudin, M. & Scharenberg, K. (2017). Employment Situation at Age Thirty. Results Update of the Swiss Panel Survey TREE. Bern: TREE.